

Remarks

Claims 1-28 are currently pending and stand rejected. Claims 4, 6, 7, 12, 18, and 26 have been amended. Reconsideration of the above-identified application in view of the present amendment and remarks is respectfully requested.

I. Suggested Amendment to Claim 7

The Examiner's suggestion for claim 7 is noted with appreciation, and the claim has been amended accordingly.

II. Objection to Claims 12 and 18 under 37 CFR 1.75(d)(1)

Claims 12 and 18 have been objected to for informalities. To advance prosecution of the application, claims 12 and 18 have been amended as suggested in the Office Action. It is thus respectfully requested that the objection be withdrawn.

III. Objection to Claims 4, 6, and 26 under 37 U.S.C. 1.75(a)

Claims 4, 6, and 26 have been objected to as failing to point out and distinctly claim the invention. To advance prosecution of the application, claims 4, 6, and 26 have been amended as suggested in the Office Action. It is thus respectfully requested that the objection be withdrawn.

IV. Rejection of Claims 1-4, 7, 9-17, 19-22, and 26 under 35 U.S.C. §103(a)

Claims 1-4, 7, 9-17, 19-22, and 26 have been rejected as unpatentable over U.S. Patent No. 6,801,662 to Owechko et al. (hereinafter: "Owechko"), in view of a first article "Improved Distortion-Invariant Pattern Recognition Through Synthesizing Similar Training Images into a Composite Image" by Chen et al. (hereinafter: "Chen") and a second article "The Quadtree and Related Hierarchical Data Structures" by

Samet (hereinafter: "Samet"). It is respectfully submitted that claims 1-4, 7, 9-17, 19-22, and 26 define over the cited art.

A. Claims 1-4, 7, and 9-12

Claim 1 recites a system for selectively generating training data for a pattern recognition classifier from a plurality of training images representing an output class. An image synthesizer combines the plurality of training images into a class composite image. A grid generator generates a grid pattern representing the output class from the class composite image. A feature extractor extracts feature data from the plurality of training images according to the generated grid pattern.

It is respectfully submitted that the cited art, taken alone or in combination, fails to teach or suggest all of the elements of the claims. The Office Action relies on Chen to teach the generation of the composition class image. However, there is no teaching in Chen of taking the plurality of images used to generate training data for the class and combining the entire plurality of images into a class composite image as is recited in claim 1. Chen appears to teach only the combination of similar training images having similar distortion to create a smaller set of training samples. See Chen §1, second paragraph. Combining the plurality of samples used for training for a given class would leave only a single training sample for the class, which would clearly be insufficient for training a pattern recognition classifier. There is nothing in the other cited references or in the general knowledge of the art would lead one skilled in the art to modify Chen to provide the claimed image synthesizer.

It is further respectfully submitted that one skilled in the art would not seek to combine the cited art in the manner suggested in the Office Action. For example,

there is no teaching or suggestion within the art of a feature extractor that extracts feature data from the plurality of training images according to a generated grid pattern. While Owechko appears to teach a feature extractor and Samet appears to teach the generation of a grid, nothing in Owechko, Samet, or Chen would lead one skilled in the art to utilize a generated grid pattern as a guide for extracting data from a training image or, for that matter, generate a composite input pattern for this purpose. The Office Action states that one skilled in the art would be lead to modify the teachings "to obtain a systematic way to represent homogeneous parts of an image." Office Action, pg. 6, lines 10-11. It is respectfully submitted, however, that this reasoning is incomplete, as there is no apparent motivation for one skilled in the art to desire the division of an image into homogenous regions prior to feature extraction. There is simply no reason, absent the teachings of the subject application, why one skilled in the art would apply the grid of Samet to a composite image to produce a pattern for feature extraction. The Examiner appears to be using the benefit of applicants' disclosure and hindsight to find this combination obvious.

Similarly, one skilled in the art would not seek to combine Owechko, Chen, and Samet to generate a grid pattern from a composite class image in the manner stated in the Office Action. As discussed previously, Chen appears to teach the reduction of groups of similarly distorted training samples into composite training samples. Feature data is extracted from these composite training samples in place of the training samples comprising the composite training samples to reduce the number of samples provided to the classifier. The Office Action states that it would be reasonable to combine Chen with Owechko "to detect and identify the presence

or absence of interesting targets even when they are distorted.” However, a system formed from a combination of Chen and Owechko in order to accomplish this objective would not include “a feature extractor that extracts feature data from the plurality of training images,” as recited in claim 1. Instead, the feature extractor would extract data from composite samples, which would achieve the objectives expressed in Chen and cited as motivation by the Office Action. Even taking into account the grid-trees discussed in Samet, one skilled in the art presented with Chen and motivated by a desire to detect and identify the presence of distorted targets would have no reason to produce composite training samples, and then present the original samples to the feature extractor as recited in claim 1. Therefore, even if combined, one does not achieve the claimed invention.

It is respectfully submitted that the combination of Chen, Owechko, and Samet presented in the Office Action is the result of hindsight reconstruction of claim 1. As the Federal Circuit has noted, it is impermissible to use the claimed invention as an instruction manual or “template” to piece together the teachings of the prior art so that the claimed invention is rendered obvious. *In re Fritch*, 972 F.2d 1260, 23 USPQ 2d 1780 (1992). It is thus submitted that claim 1 defines over the cited art, and the withdrawal of the rejection of claim 1 is respectfully requested.

Each of claims 2-4, 7, and 9-12 depend, directly or indirectly, from claim 1, and are allowable for at least the same reasons. It is thus submitted that each of claims 2-4, 7, and 9-12 define over the cited art, for at least the same reasons and the withdrawal of the rejection of these claims is respectfully requested.

B. Claims 13-17

Claim 13 recites similar subject matter to claim 1, although it does not disclose the image synthesizer. As described above, however, it is respectfully submitted that one skilled in the art would not seek to combine Chen, Owechko, and Samet in the manner described in the Office Action. There is simply no teaching or suggestion in the cited art, nor a reason in the general state of the art, for one skilled in the art to apply a grid generation algorithm to a class composite image to generate a grid pattern and then utilize the grid pattern to extract data from the training samples. It is thus respectfully submitted that for many of the reasons discussion with respect to claim 1 above, claim 13 defines over the cited art. Each of claims 14-17 depend, directly or indirectly, from claim 13, and are allowable for at least the same reasons. It is thus submitted that each of claims 14-17 define over the cited art, and the withdrawal of the rejection of these claims is respectfully requested.

C. Claims 19-22 and 26

Claim 19 recites similar subject matter to claim 1 in method form, and is allowable for many of the reasons described under claim 1 above as well as for several additional claim steps. As described with respect to claim 1, one skilled in the art would not seek to combine Chen, Owechko, and Samet in the manner described in the Office Action. There is simply no teaching or suggestion in the cited art, nor a reason in the general state of the art, for one skilled in the art to apply a grid generation algorithm to a class composite image to generate a grid pattern and then utilize the grid pattern to extract data from the training samples. It is thus

respectfully submitted that claim 19 defines over the cited art. Each of claims 20-22 and 26 depend, directly or indirectly, from claim 19, and are allowable for at least the same reasons. It is thus submitted that each of claims 19-22 and 26 define over the cited art, and the withdrawal of the rejection of these claims is respectfully requested.

IV. Rejection of Claim 6 under 35 U.S.C. §103(a)

Claim 6 has been rejected as unpatentable over Owechko in view of Chen and Samet and in further view of an article "A New Method of Texture Segmentation" by Jiang et al. (hereinafter, "Jiang"). Claim 6 depends, indirectly, from claim 1, and it is allowable for at least the reasons given for the allowance of claim 1. Jiang does not remedy the various deficiencies of Owechko, Chen, and Samet as applied to claim 1. It is thus submitted that claim 6 defines over the cited art, and the withdrawal of this rejection is respectfully requested.

V. Rejection of Claims 8, 27, and 28 under 35 U.S.C. §103(a)

Claims 8, 27, and 28 have been rejected as unpatentable over Owechko in view of Samet and Chen and in further view of Samet. This rejection appears unclear, as the rejection of 8, 27, and 28 adds no additional reference, but cites Samet twice. Since the reasoning in the rejection appears to cite to Samet, it is assumed that this is a typographical error, and the rejection will be treated as if it is based solely on Owechko, Samet, and Chen like the rejection of claims 1-4, 7, 9-17, 19-22, and 26 above. As set forth in discussion of these claims, Owechko, Samet, and Chen, taken alone or in combination, would not lead one skilled in the art to the system claimed in claim 1 or the method claimed in claim 19. Claim 8 depends, indirectly, from claim 1, claim 27 depends from claim 19, and claim 28 depends from

claim 19 through claim 27. It is thus respectfully submitted that claims 8, 27, and 28 define over the cited art and the withdrawal of the rejection of claims 8, 27, and 28 is requested.

VI. Rejection of Claim 18 under 35 U.S.C. §103(a)

Claim 18 has been rejected as unpatentable over Owechko in view of Samet and Chen and in further view of U.S. Patent No. 5,983,147 to Krumm (hereinafter, "Krumm"). Claim 18 recites that the vision system comprises a stereo vision system that produces three-dimensional image data of the vehicle interior as a stereo disparity map. In other words, the training images, would include a stereo disparity map, which is effectively three-dimensional, and the grid pattern, as disclosed in the Specification at pg. 9, lines 9-11, would also need to be three-dimensional. Krumm appears to teach a stereo camera, but nothing in the cited art, specifically the quad-grid generation of Samet, would lead one skilled in the art to apply grid models to three-dimensional stereo camera images. Further, Krumm does not remedy the deficiencies of Owechko, Samet, and Chen as applied to claims 13 as described previously. Claim 18 depends from claim 13, and is allowable for at least the same reasons. It is thus respectfully submitted that claim 18 defines over the cited art and the withdrawal of the rejection of these claims is respectfully requested.

VII. Rejection of Claims 23 and 24 under 35 U.S.C. §103(a)

Claims 23 and 24 have been rejected as unpatentable over Owechko in view of Samet and Chen and in further view of an article "Texture Segmentation using Multiscale Hurst Features" by Kaplan et al. (hereinafter: "Kaplan"). Claims 23 and 24 depend from claim 19, and it is allowable for at least the reasons given for the

allowance of claim 19. Kaplan does not remedy the various deficiencies of Owechko, Chen, and Samet as applied to claim 19. It is thus submitted that claims 23 and 24 define over the cited art, and the withdrawal of this rejection is respectfully requested.

VIII. Rejection of Claims 5 and 25 under 35 U.S.C. §103(a)

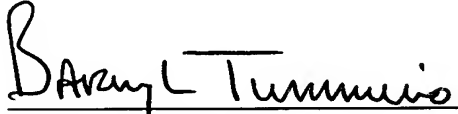
Claims 5 and 25 have been rejected as unpatentable over Owechko in view of Samet and Chen and in further view of U.S. Patent No. 4,769,850 to Itoh et al (hereinafter, "Itoh"). Claims 5 and 25 depend, either directly or indirectly, from claims 1 and 19 respectively, and are allowable for at least the reasons given in the discussion of these claims. Itoh does not remedy the various deficiencies of Owechko, Chen, and Samet as applied to claims 1 and 19. It is thus submitted that claims 5 and 25 define over the cited art, and the withdrawal of this rejection is respectfully requested.

IX. Conclusion

In light of the amendment and remarks above, it is respectfully submitted that claims 1-28 define over the cited art. The withdrawal of the rejections of these claims and the passage of the application to allowance is respectfully requested.

Please charge any deficiency or credit any overpayment in the fees for this
matter to our Deposit Account No. 20-0090

Respectfully submitted,


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